AIR CORPS NEWS LETTER

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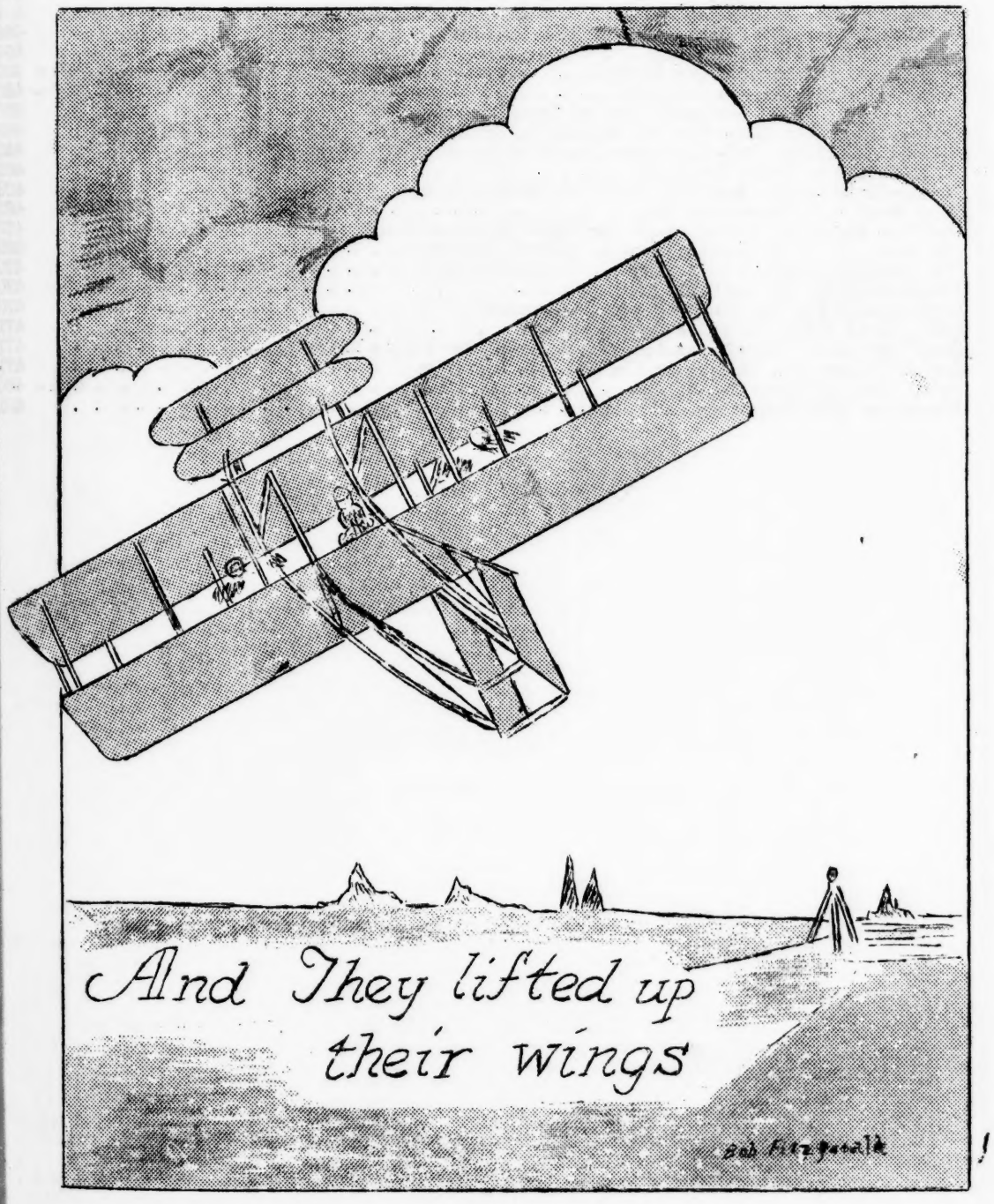

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Information Division, Air Corps — November 30, 1932 — Munitions Building, Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

Publishers are authorized to reprint material appearing herein, except that portion of the News Letter beginning with "Notes from Air Corps Fields."

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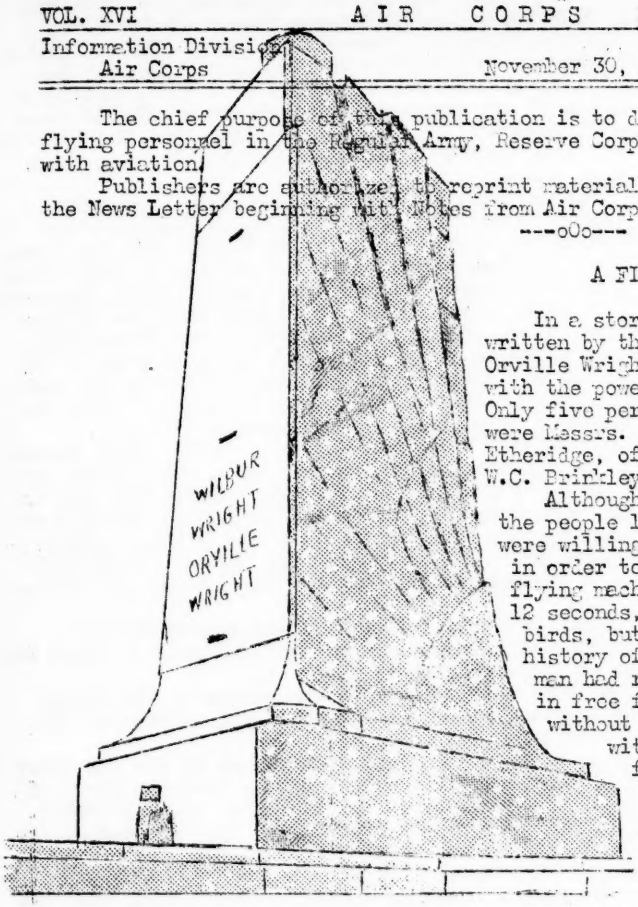
A FITTING MEMORIAL TO THE PIONEERS OF FLIGHT



In a story on "The Early History of the Airplane," written by the two famous aviation pioneers, Wilbur and Orville Wright, they tell us that "the first flights with the power machine were made on December 17, 1903. Only five persons besides ourselves were present. These were Messrs. John T. Daniels, W.S. Dough, and A.D. Etheridge, of the Kill Devil Life-Saving Station; Mr. W.C. Brinkley, of Manteo; and Mr. John Ward, of Nagshead.

Although a general invitation had been extended to the people living within five or six miles, not many were willing to face the rigors of a cold December wind in order to see, as they no doubt thought, another flying machine NOT fly. The first flight lasted only 12 seconds, a flight very modest compared with that of birds, but it was, nevertheless, the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in free flight, had sailed forward on a level course without reduction of speed, and had finally landed without being wrecked. The second and third flights were a little longer, and the fourth lasted 59 seconds, covering a distance of 852 feet over the ground against a 20-mile wind."

Now, 29 years later, on the spot where the Wright Brothers made their first successful flight, stands a 60-foot granite pylon, erected on the summit of Kill Devil Hill at Kitty Hawk, N.C., to mark the birthplace of modern aviation. This monument was dedicated on Saturday afternoon, November 19th, to the genius and courage of these two young Dayton bicycle mechanics who conquered the air. Wilbur Wright is dead, but Orville, who soared aloft for the first time in history in a power plane, attended the ceremonies dedicating the memorial.

Led by Secretary of War Hurley and Secretary Adams of the Navy, a large crowd of famous flyers and flying enthusiasts attended the dedication of the Wright Beacon. The monument is a magnificent triangular granite shaft surmounted by an airways beacon. Flood lights will illuminate the monument at night, making it a distinctive feature of the landscape. It will serve as an aid both to aerial and marine navigation. The memorial was erected by authority of an Act of Congress by the United States Government at a cost of approximately $250,000 to commemorate the marvelous achievement of the Wright Brothers at this location. The monument was constructed by the Quartermaster Corps of the United States Army, under the general supervision of a commission composed of the Secretary of War, the Secretary of the Navy and the Secretary of Commerce.

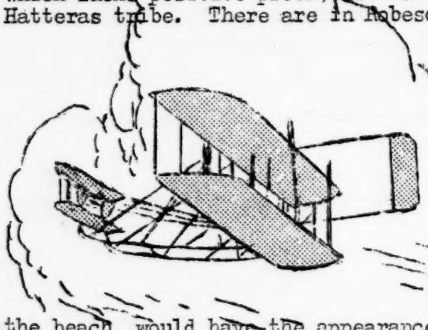
At the instance of the Kill Devil Hill Memorial Association, the Senators and Representatives of North Carolina secured the passage of a bill by Congress authorizing the acquisition of a site and the erection of a monument commemorating the first heavier-than-air flight. This bill was approved by President Coolidge on March 2, 1927. Kill Devil Hill has an elevation of 91 feet above sea level. On account of prevailing winds, the sand on this hill was shifting constantly, and one of the first tasks of the construction engineers of the Quartermaster Corps was to anchor this sand. This was done by clothing the wind-swept dune with a type of grass which tied it to the beacon. This was a remarkable achievement, especially in view of the fact that so far as known nothing of the kind had ever been previously attempted, and no data on the subject was available. Many engineers expressed the opinion that it could not be done and recommended a change of site.

The design of the monument was selected after a nation-wide competition of artists and architects. The monument is made of Mount Airy granite. On December 17, 1928, the 25th anniversary of the first flight, the corner stone of the monument was laid by the Secretary of War, Dwight F. Davis, in the presence of a large gathering of persons from all sections of the country. Actual construction work on the monument, however, did not begin until February, 1931. The delay was necessary in order to permit the growth of the grass to anchor the sand dune. The completed monument, together with the cost of acquiring a site and incidental expenses, represents an expenditure of approximately $250,000.

The site of the new monument is in a region rich in historic interest. Not only is it the birthplace of modern aviation, but it is within a few miles of the birthplace of Virginia Dare, the first white child born in the territory embraced within the United States. It will be recalled that the first English Colony in North America was established on August 17,1585, by Sir Walter Raleigh on Roanoke Island, the outlines of which are plainly visible from the Wright monument. The following year the colonists, threatened with starvation, and Indian attacks, returned to England. A few days after they had left, Sir Richard Grenville arrived with supplies and more colonists, fifteen of whom agreed to remain.

In 1587, more colonists arrived, but none of the original fifteen was alive. Nevertheless the new colonists, numbering 101 persons, remained on the Island. Here, on August 18, 1587,

Virginia Dare, a grand daughter of John White, leader of the Colony, was born, the first native white American. White soon returned to England, leaving the colonists on the Island. He was detained in England until 1591, and upon his return to Roanoke Island he found not a trace of the ill-fated colony, save only the word "Croatan" carved on a tree. The assumption, which lacks positive proof, is that the Colony went away with some friendly Indians of the Hatteras tribe. There are in Robeson County, North Carolina, a remnant of a mixed people of Indian habits and occasional English names calling themselves "Croatans." It is quite possible that the identity of the lost English Colonists disappeared among their Indian hosts.



Near the site of the original Colony on Roanoke Island is the town of Manteo, named for the first Indian to accept the Christian faith. Not far from the new Wright Memorial is the village of Nag's Head. This is an interesting little summer resort frequented by North Carolinians. It is said that the village derived its peculiar name many years ago from a ruse practiced by beach combers who fastened a lantern to the head of a horse which, when the horse walked up and down the beach, would have the appearance of a light on a ship gently riding at anchor. This ingenious device would lure vessels to the shore to be pillaged by the beach combers.

Near Nag's Head, the Hady, a ship of the British Navy, ran aground in 1698. This vessel had been sent to North Carolina to prevent the shipment of tobacco to Boston without the payment of the British tax. On the advice of the native pilot, the captain removed the guns in an effort to float the ship. As soon as the guns were off, the Colonists in the vicinity attacked and destroyed the ship. Off the coast in this vicinity in 1918, the British tanker, Murlo, was torpedoed and sunk by a German submarine. The members of the United States Coast Guard effected a daring rescue of 42 of the 52 members of the crew of the blazing and sinking ship.

Arrangements had been made to handle 20,000 persons, but heavy rains throughout the night and most of the morning cut the attendance to a bare thousand, and hundreds of these sat in automobiles far from the speakers' stand as the storm raged.

The Hon. Patrick J. Hurley, Secretary of War, paid tribute to the genius of the Wright Brothers, classing them as among "America's immortal sons," in the principal address of the occasion. Extracts from his address are quoted below, as follows:

"We have come here to dedicate a monument to the genius and the courage of the two great American pioneers, Wilbur and Orville Wright. While Orville Wright was to have the honor of piloting the plane in the first actual flight, the achievement was the joint accomplishment of both brothers. After years of intelligent and persevering experiment, they succeeded, for the first time in human history, in achieving a successful power-driven flight. As a direct result of their successful flight right here at Kill Devil Hill on December 17, 1903, the conquest of the air is to be achieved. I use the future tense advisedly. Great as has been the progress since these intrepid men achieved the first successful flight in a power-driven plane, air transportation is yet in its infancy.

By this eloquent monument America pays a profound tribute to two of her immortal sons. Little that we may say here today will add to the lustre of their renown or to the glory of their achievements. Far more eloquent than words, the mighty aircraft that fly above us day and night proclaim their handiwork. In honoring these two pathfinders, we should recognize in their achievement the spirit of America that made their inventions possible. We should dedicate ourselves to the perpetuation of the ideals of American life that encourage such individual enterprise. In world history our nation is very young, but many of civilization's most significant victories over the elements of time and space first were realized in this country.

In the dauntless courage of the Wright Brothers, who despite all perils, criticism and ridicule, persisted in their faith, and lived to realize their dreams, we see a manifestation of that same pioneer spirit that explored a continent, colonized a new world and developed American civilization. These very shores of North Carolina which witnessed the successful conquest of the air by Wilbur and Orville Wright have beheld many other striking examples of this great pioneer spirit. Close to this very sand spit, where now stands the monumental shaft to honor the Wright Brothers, landed Sir Walter Raleigh's band of fearless colonists. They came not as adventurers in a quest of gold and glory but as homemakers to create better surroundings for themselves and their families. Not far from here at Roanoke Island was born Virginia Dare, the first child of British parents in America. Ill fate followed many of these early expeditions. Sir Walter Raleigh's colonists disappeared. As the first pioneers vanished, always there were others, still undaunted, ready and eager to leave the Old World with its prejudices and limitations and its tyrannies to seek new hope and new promise on the new continent. These pioneers brought with them the ideals of freedom and justice, and other pioneers carried them across the continent to the Pacific. To the legitimate aspirations of the individual, America offered equal opportunity. On this new continent there has been established a new high level for individual happiness and human achievement by guaranteeing to each individual equality of opportunity and protection of the right of each to "life, liberty and the pursuit of happiness."

This American victory for the human race over the forces of greed and oppression was not won without sacrifice of blood and treasure. The constant increase of governmental functions is a decided threat to freedom and individualism. As the beacon light from this shaft will guide mariners of the sea and air to harbors of safety, so may the bright rays of individualism and equality of opportunity that made possible the feats of Wilbur and Orville Wright, show us the way to the achievement of the ideals of America."

The Hon. J.C.B. Ehringhaus, Governor-elect of North Carolina, and Representative Lindsay Warren, of the First North Carolina District, also spoke, each paying tribute to the Wrights and their achievements. Miss Ruth Nichols, one of the world's outstanding women fliers, paid a brief tribute and then, standing in the rain before the face of the monument, unveiled the marker, which stands atop of Kill Devil Hill, a large sand dune.

Hardly had the exercises been completed when the sun came out, and the weather was clear as honor guests of the occasion gathered at Carolina Beach for a luncheon given by the Kill Devil Hill Memorial Association. Orville Wright renewed acquaintanceships with residents of the Carolina Banks, who were here when he and his brother first experimented with their boxkite glider and then with their motor-driven plane. Noted for modesty and a retiring nature, he took no part in the ceremonies.

V-6357, A.C.

MARCH FIELD MAINTAINS HIGH MARKSMANSHIP

WITH the completion of the 31st Bombardment Squadron's field duty at Rockwell Field on October 10th, the 7th Bombardment Group finished its 1932-33 bombing and gunnery with credit to itself and distinction to its individual members. Every officer in the Group qualified as EXPERT bomber. Scorings were done by two commissioned officers riding in the rear of the plane on each record run. The Squadron's records are as follows:

9th Squadron: Average score - 1823.8; high scores, 2nd Lt. J.D. Hutchinson, Air Reserve, 1927; Capt. Harold D. Smith, A.C., 1914; 2nd Lt. Lester G. Heston, Air Reserve, 1914.

11th Squadron: Average score - 1827.6; high scores, 2nd Lts. Donald R. Lyon, 1965; Lewis E. Parker, 1900; Joseph A. Miller, 1890.

31st Squadron: Average score, 1757; high scores, 2nd Lts. Millard L. Lewis, 1868, Marvin L. Harding, 1860; 1st Lt. Ralph A. Snavely, 1857.

"It is the general consensus of opinion among the officers of this Group," says the News Letter Correspondent, "that the present requirement of 1500 points for qualification as EXPERT bomber is too low, and it has been suggested that the qualification requirement be raised. Out of 43 officers in this Group who shot the aerial gunnery records, forty qualified as Expert, two as Sharpshooters and one as Marksman."

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DETROIT CITIZENS INTERESTED IN AVIATION

Many calls are received each month at Selfridge Field for officers to address civic organizations and clubs in Detroit and vicinity, which is a very good indication of the interest that civilians in this community have in the Air Corps and aviation in general. No opportunity is passed up to fulfill these requests and to present to the various clubs and organizations a clear picture of the Air Corps, its duties and responsibilities.

During the month of October Major George H. Brett, Commanding Officer of Selfridge Field, addressed the Boulevard Shrine Club on the "Organization and Functions of the Air Corps." Major A.H. Gilkeson addressed the Detroit Edison Club on the "History of the Army Air Corps and Selfridge Field." Lieut. A.A. Kessler also made an address on the "Duties and Training of an Air Corps Officer." All of these addresses were received with much enthusiasm, and it is believed that much can be done to acquaint civilians with the Air Corps in this way.

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SECOND LIEUTENANTS HAVE THEIR TURN IN PROMOTIONS

In recent months, 1st Lieutenants of the Army Air Corps happened to be so placed on the promotion list that most of the promotions in this branch of the service fell to their lot. Now the tide seems to have changed, and the second lieutenants are having their turn, according to Special Orders of the War Department recently issued, announcing promotions among Army commissioned personnel. Just lately, 19 Air Corps officers have either purchased new solitary silver bars or are still able to use their old bars with the gold rubbed off.

Lieut.-Colonel John H. Howard, Commanding Officer of Mitchel Field, N.Y., discarded his silver oak leaves for eagles, while Major John H. Pirie, on duty in the Office of the Chief of the Air Corps, changed his gold leaves for others of a silvery hue. The date of rank of these two field officers is November 1, 1932. The date of rank of 1st Lieut. Clinton W. Davies is October 29, 1932, while the other promoted second lieutenants, listed below in proper order, rank as of November 1, 1932, viz: Reuben Kyle, Jr., Harvey F. Dyer, Earl C. Robbins, A.J. Kerwin Malone, Russell Keillor, Mark D.S. Steensen, Ernest H. Lawson, John E. Bodle, William H. Doolittle, Russell Scott, Burton M. Hovey, Jr., Richard E. Cobb, Dale D. Fisher, Henry W. Dorr, Irvin A. Woodring, Carlisle I. Ferris, Elwood R. Quesada and Willard R. Wolfinbarger.

The last Air Corps first lieutenant recently promoted is Captain Caleb V. Haynes. Among the next 200 first lieutenants of all branches of the Army on the promotion list are 36 members of the Air Corps (18%), viz: Harold A. Bartron, No. 4; John F. Whitely, 12; Guy L. McNeil, 16; Clarence P. Talbot, 22; Alfred L. Jewett, 25; Louie C. Mallory, 28; Lewis S. Webster, 30; Roy W. Camblin, 34; Cornelius J. Kenney, 43; Winfield S. Hamlin, 44; Robert T. Zane, 56; LeRoy A. Walthal, 67; Lucas V. Beau, Jr., 68; N.R. Laughinghouse, 73; James M. Gillespie, 107; Frederick von H. Kimble, 158; William J. Hanlon, 159; Howard A. Craig, 161; David R. Stinson, 162; Joseph T. Morris, 163; Armor S. Heffley, 166; Wm. R. Sweeley, 168; George A. McHenry, 170; Carlyle H. Ridenour, 176; Russell C. Macdonald, 177; Bennett E. Meyers, 178; Paul H. Prentiss, 181; Robert S. Heald, 182; Warren A. Maxwell, 183; Frederick M. Hopkins, Jr., 186; George E. Rice, 189; Leonard D. Weddington, 190; Edward M. Powers, 193; William B. Clarke, 196; Paul E. Burrows, 198; George H. Brown, 199. Among the next 200 first lieutenants on the promotion list, 64 are members of the Air Corps, or 32%. During October, a total of 24 first lieutenants from various branches of the Army were promoted. On the assumption that this number would be the average in the promotion of first lieutenants from now on, it would appear that Lieut. Brown should receive his captaincy within the space of eight months; furthermore, that promotions from then on should be at a much more rapid rate.

From the standing of second lieutenants of the Air Corps on the promotion list, it seems that for some months to come promotions will be at a slower rate. Among the first 200 officers of this rank on the promotion list, only 30, or 15%, hold commissions in the Air Corps, viz: George W. McGregor, 12; Charles A. Harrington, 13; Maurice F. Daly, 30; Laurence S. Kuter, 40; George McCoy, Jr., 53; Julius T. Flock, 58; John M. Sterling, 69; Mark K. Lewis, Jr., 71; Orrin L. Grover, 81; Milton M. Towner, 99; Fay R. Upthegrove, 104; Charles B. Stone, 3rd, 111; John W. Kirby, 132; Marrion Huggins, 156; Neil B. Harding, 163; Robert L. Easton, 166; Frank K. Park, 173; Walter W. Gross, 174; Otto C. George, 177; John N. Jones, 178; Leo W. DeRosier, 190; Gordon P. Saville, 191; Charles B. Overacker, Jr., 192; George H. Macnair, 193; William B. Blaufuss, 194; James A. Ellison, 196; Hoyt L. Prindle, 197; James F. Walsh, 198; George R. Geer, 199; Donald W. Benner, 200.

During October, a total of 29 second lieutenants of all branches of the Army were pro-

moted. Assuming this number to be the average monthly rate of promotions, 2nd Lieut. Benner should receive his promotion within seven months. There should be considerable acceleration in promotions among Air Corps second lieutenants in the next 200 officers of this rank on the promotion list, for 78, or 39%, are members of the Air Corps.

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WIND STORM CREATES HAVOC AT MARCH FIELD

A terrific wind storm, estimated at over 50 miles per hour, suddenly visited March Field, Riverside, Calif., on Monday, October 24th, and before five planes of the 11th Bombardment Squadron could be placed in hangars considerable damage was done to them. Three B-2 (Condors) had badly damaged vertical stabilizers and elevators. Two Y1-B6's (Keystones) had damaged wings. Sergeant Newman, 11th Squadron, received a broken arm when an unusually stiff gust of wind lifted a wing some 15 feet in the air, throwing the sergeant"for the count." Second Lt. E.S. Wetzel received a sprained ankle and is now in quarters. In spite of the seriousness of the situation, several amusing incidents happened during the height of the "maneuvers." One sergeant stated that it was a most unusual experience to sit in the cockpit of a Bomber and be able to fly straight up by merely pulling back on the wheel - an auto-giro feeling as it were. Another, who was evidently from Texas, compared it to a bucking broncho.

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MARCH FIELD "DESTROYED" IN AIR RAID

On the night of October 26th, hundreds of spectators were afforded an opportunity to witness the 7th Bombardment Group attack and destroy March Field in a daring and spectacular air raid. The exercise took place as a part of the training program at March Field, and in conjunction with the training of Battery "A," 63rd Coast Artillery (Anti-aircraft). Major J.T. McNarney commanded the Bombardment Group.

Assuming March Field as being an enemy air base, strongly fortified by anti-aircraft artillery (simulated by the searchlight battery), the Bombardment Group left its base at Alhambra to bomb the field and destroy buildings and shops, thereby paralyzing the field's usefulness to the enemy. Each of the three squadrons of the Group flew different routes to the objective, and about 7:00 p.m. began converging over the appointed spot. Bombardment planes were preceded by supporting Pursuit planes, the idea being that the Pursuit planes should be mistaken for the huge Bombers insofar as the anti-aircraft sound detectors were concerned. This plan worked so well that, while the smaller planes flew around over March Field below 3,000 feet altitude, the Bombardment formations slipped over, dropped their loads of death and destruction (bombs were simulated by flares) and then roared away to safety, only one plane being spotted and theoretically lost before it had completed its mission. Considering the fact that a total of 23 Bombers passed over the objective during the raid, and that the searchlight battery had practiced at March Field for about one month, "it is believed," says the News Letter Correspondent, "the 7th Bombardment Group deserves high commendation in carrying out its mission with the 'loss' of only one plane."

Remarks of praise for the airmen were heard on all sides from the deeply interested visitors at the field. The people were highly pleased with the display of searchlight beams scanning the heavens for the birdmen; plane after plane zooming over at altitudes from 5,000 feet to 11,000 feet; bright flares hanging lazily in the sky, lighting up the entire countryside; and later the Group landing by flights and the planes stored in the hangars, but they also understood that the mission was a complete success for the Air Corps. They seemed also to be struck with the realization "of what might have been" had real live bombs been used instead of the flares.

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TECHNICAL SCHOOL LIBRARY REDECORATED

The Technical Library of the Air Corps Technical School, Chanute Field, Rantoul, Ill., was recently redecorated and rearranged. Among innovations are steel filing and index cabinets for 90,000 blue prints, new ceiling lighting, new curtains and photographs, all furnished and executed at a minimum cost. The curtains are of unbleached fabric, the valance carrying duplicate horizontal stripes of satin ribbon in the ultramarine and golden orange of the Air Corps, while the drapes are gathered with silk cords of the same colors. Cost of the curtains was covered by local post donations. The photographs, framed in walnut and glass, without cost to the government, are enlargements, 20" x 24" of a series of twelve aerial photographs of single planes and meticulously exact formations of elements of the First Pursuit Group at Selfridge Field, recently taken by Lieut. George W. Goddard and Master Sergeant G.B. Gilbert, of the Air Corps Technical School. These photographs, with their marvelous cloud effects and examples of precision formation flying, are considered the most beautiful set of aerial photographs ever made.

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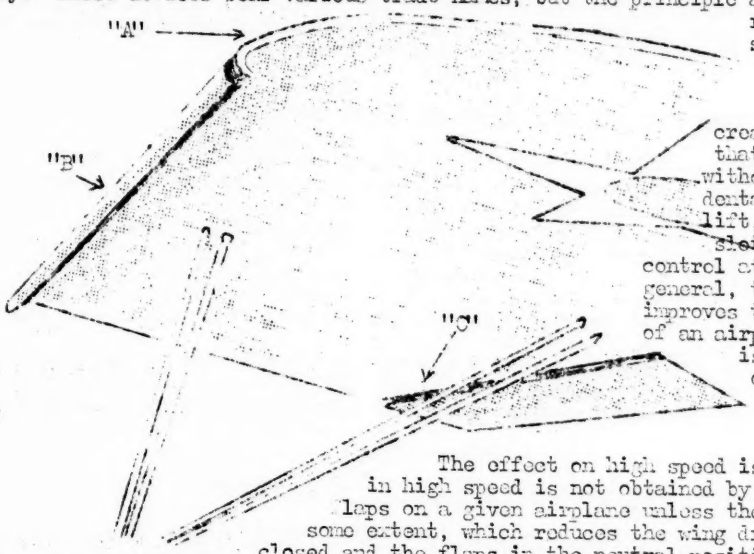
FORCED LANDING IN RAILROAD YARD

What might have been a very serious accident ended happily for Lieut. Paul Hinds, Air Reserve, though not so happily for his ship, when he was forced down by motor trouble in Detroit recently. Lieut. Hinds, an inactive Reserve officer who lives in Detroit, was flying a Curtiss P-6A during the regular Sunday morning Reserve training period at Selfridge Field. He was flying over Detroit when, from some unknown cause, his motor ceased to function. The only available place to set his ship down was a railroad freight yard directly beneath him. He had already put his wheels on the ground between the railroad tracks when he saw that he was heading directly for a group of small boys who had come into the railroad yard to watch him land. His only recourse was to ground loop into a line of box cars to one side.

Lieut. Hinds escaped without a scratch. The ship, however, was damaged so badly that a preliminary examination indicated that it cannot be repaired.

NOTE ON THEORY AND OPERATION OF SLOTS AND FLAPS

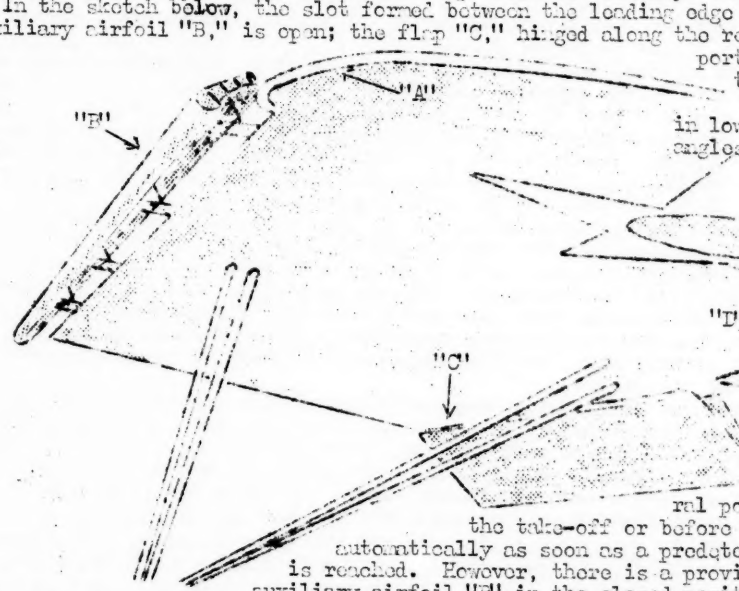
From an engineering standpoint, the arguments for and against the use of slots and flaps are approximately equal. The maintenance and experience of the service pilots on an Attack type airplane delivered to a tactical organization for service test in respect to these installations will have an important bearing upon future developments along this line by the Materiel Division. It should be pointed out that, in addition to the apparatus described herein, there have been a number of developments tested by aerodynamic laboratories in this country. These devices bear various trade names, but the principle and the effect are comparable to the device described.



Primarily, the function of flaps and slots on an airplane wing is to increase the maximum lift over that obtained on the wing without slots or flaps. Incidental to the increase of the lift, flaps and particularly slots, improve the lateral control at stalling speeds. In general, the use of flaps and slots improves the flying characteristics of an airplane at low speeds; that is, in landing and in take-off. They prevent or at least postpone the tendency toward involuntary spinning.

The effect on high speed is indirect. An increase in high speed is not obtained by the use of slots and flaps on a given airplane unless the wing area is reduced to some extent, which reduces the wing drag when the slots are closed and the flaps in the neutral position; that is, when both the slots and the flaps are inoperative. The airplane with wings of such reduced area with slots and flaps inoperative (or without slots and flaps) would have an excessive landing speed, but the opening of the slots and deflecting of the flaps would increase the lift and thus reduce the landing speed to approximately the same speed that the airplane had before the wing area was reduced.

Although there are several possible combinations of the flap, slot, and ailerons, the enclosed photographs show a representative type used on the Army Attack airplane, Curtiss YA-8. In the sketch below, the slot formed between the leading edge of the main wing "A" and the auxiliary airfoil "B," is open; the flap "C," hinged along the rear spar at the inner portion of the wing, is in the deflected position.



This combination is used in low-speed flying at high angles of attack, where the auxiliary airfoil automatically assumes the "open slot" position and the flap is depressed by a suitable manual control. The aileron "D" is shown in the "up" position, but it is controlled by the stick independently of the slot or flap. The flap is lowered from its neutral position by the pilot for the take-off or before landing. The slot opens automatically as soon as a predetermined angle of attack is reached. However, there is a provision for locking the auxiliary airfoil "B" in the closed position, thus making the slot action inoperative. The sketch at the top of this page shows the position of the auxiliary airfoil "B" in the "slot closed" position, the flap in neutral, and the aileron "D" in the "down" position.

It is fairly well known that the lift of any conventional airfoil increases with an increasing angle of attack. However, there is a limit to the increase of lift, since, depending on the shape of the airfoil and beyond angles of attack of 16 to 20 degrees, the lift does not continue to increase but decreases more or less sharply. It is further known that in the case of the conventional airfoil at small and medium angles of attack, where the lift is proportional to the angle, the flow of air above and below the airfoil is approximately parallel to its curvature. As the angle of attack increases, the flow of air begins to detach itself from the upper surface and to form a turbulent flow. This continues until the angle of maximum lift is reached, beyond which the flow breaks down quite suddenly and is accompanied by a drop in lift and a large increase in drag.

Both the slap and slot prevent the formation of turbulent flow above the airfoil; although each accompanies this by a different process. This is the reason why the maximum increase in the lift obtained with the flap alone is improved by the use of the slot and vice versa. By keeping the airfoil at some medium angle of attack and depressing the flap, the

airflow on a large portion of the upper surface remains undisturbed, because the wing itself did not change its angle; the flow of the air on the lower surface is, however, deflected downward by the depressed flap. This additional deflection of the mass of air is the cause of the increase of lift, although, as for the conventional airfoil, there is a limit of the flap angle (about 60 degrees down) beyond which the lift begins to decrease owing to the formation of a great turbulance behind the depressed flap. A slot, of an approved form, near the leading edge has the effect of producing a stream of air of high velocity passing through the slot, the direction of which is from below, up and over the upper wing surface. This stream of high velocity through the slot is due to a considerable positive pressure at the entrance of the slot and a high negative pressure at its exit.

The effect of the slot is due to the high inertia of the air particles emerging from the slot at high velocity substantially in a direction parallel to the upper surface, thus preventing formation of detrimental eddies above the wing and smoothening the general flow. The combination of a flap and slot increase the lift of the basic wing section as much as 150 percent if used on the full span of a thin or medium thick airfoil.

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NEW PURSUIT PLANE WITH SLOTS AND FLAPS TO BE TESTED

A new Pursuit airplane (XP-934), recently delivered to the Materiel Division, Wright Field Dayton, Ohio, by the Curtiss Company, is to be subjected to full performance testing for the purpose of determining its suitability for Air Corps use.

The new airplane is of low wing all-metal construction, having a monocoque fuselage. The wing is strut braced, with entirely automatic slots and flaps. These are designed to come into full operation of their own accord at approximately 15 m.p.h. above stalling speed. The pilot can lock them, however, in any position by operating a handle in the cockpit. Thus, he is able to use them in obtaining reduced landing speed and at the same time can glide faster than at the speed at which the slots would otherwise close.

The landing gear is of fixed type with the shock absorber behind the wheel. An enclosed cockpit provides comfortable operating conditions for the pilot. The XP-934 is powered with a Curtiss V-1570 geared liquid-cooled engine. The wing span is 36 feet, the length from nose to tail, 26 feet.

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AERIAL SURVEY OF THE GUATEMALA-HONDURAN BORDER

On July 30th, last, the 12th Photo Section at France Field, Panama Canal Zone, received War Department orders to make an aerial survey of the Guatemala-Honduran Border, the lack of definite information of which has caused much altercation. On August 8th, 1st Lieut. H. K. Baisley, pilot, and Staff Sgt. B.C. Powers, 12th Photo Section, photographer, left France Field for Puerto Barrios, Guatemala. The first stop was made at David, Republic of Panama, for gas and oil. After servicing the ship, flight was resumed to Progresso, R.P., where quarters for the night were obtained at the United Fruit Company's banana plantation. On the 9th, the flight was continued to Tegucigalpa, Honduras, by way of Managua, Nicaragua. On the 10th, arrival was made at Puerto Barrios, Guatemala, at 10:50 a.m., where the photographic personnel reported to Mr. S.H. Birdseye, senior ground control engineer, and received orders and instructions pertaining to the job to be photographed.

The trip from France Field, Canal Zone, to Puerto Barrios, Guatemala, is one of the most scenic that could be found in any country. Mountains, lakes, inactive and active volcanoes, and a beautiful coast line all tend to make the flight interesting as long as everything is working right. It is certain that quite a different opinion would have been formed if a forced landing had been experienced. Upon arriving at Puerto Barrios, the photographic personnel were quartered with the United Fruit Company, and too much cannot be said as to the service and kindness of personnel of the Company to the photographic crew.

On August 11th, photographic work began, and it was found that considerable difficulty would be experienced in getting suitable weather for photography. Early morning heavy fog covered the entire valleys and remained until about 9:00 or 9:30 a.m. In addition to the fog, cumulus clouds would form over the mountains. It was decided to take off each morning by 6:00 o'clock, and in that way photographs were made on sixteen out of twenty-nine days. Some were made under high clouds, and the results were remarkable, due to the use of the new supersensitive film. After several days, the Guatemalan and Honduran Governments constructed a temporary hangar for the airplane.

The orders received from Washington were for only one airplane with no accompanying plane or mechanic, resulting in the photographer performing the mechanical work and getting a lot of experience in servicing the airplane with five-gallon cans, with the help of two natives employed by the Pan-American Airways. Their actions showed that they had very much more experience with caramottas and oxcarts than airplanes. There were very few people in this part of the country who could speak English, and, as neither the pilot nor the photographer was any better versed in Spanish, it was quite comical to see the ways of making the natives understand what was desired. The flying field is under construction by the Pan-American Airways, and it is one mile from the quarters. After each photographic mission, the T-2A camera was carried to the quarters by Guatemalan soldiers for reloading.

Up to September 6th, 8½ rolls of T-2 film and two rolls of K-1 film were exposed. On that date the crew returned to France Field for mechanical check of plane. The return trip was started on September 27th. After flying 3 hours and 30 minutes on the afternoon of September 27th, trying to get through a rainstorm to David, R.P., and with night approaching, it was decided to land. It was found that the pasture - converted into a landing field at this emergency - was six hours by horseback to the nearest village. The only house in sight was occupied by natives, who came out to the plane on horseback to carry the pilot and photographer to the house for the night.

The house consisted of three rooms, occupied by eight or ten people, ranging in age from one to fifty. On account of their unexpected visitors, one room (consisting of one board about two feet wide for one bed and a canvas stretched over two boards for another) was converted into a guest chamber by putting a straw mat on the bed of boards. Shortly after dark, the gentleman of the house informed the guests that supper was being served - consisting of salt pork ribs, blue beans and rice, and plantain.* Though the supper did not appear very ap-

*Banana-like fruit which must be cooked or fried.

petizing, it was decided to sample the plantain to stay on the good side of the host. But after completion of the meal there was plenty left on the table for two more people. The night was spent in listening to the arguments of some natives, who came home late to find their space occupied by strangers, and fighting field rats. At six o'clock the next morning, not much worse for the night's experience, the flight was resumed and a landing was made at David an hour later. A thorough scrubbing and a hearty breakfast with the Navy radio operators there brought the pilot and photographer back to normal. The O-19C was then headed north again for Puerto Barrios, arriving at 4:30 p.m.

The second mission was accomplished in eight days with one roll of T-3 film, mostly photographing control points placed on top of the highest mountains by the ground control engineers. Upon return to France Field, it was found that it had required 98 hours and 25 minutes to complete the job. The 12th Photo Section printed and delivered one each of the photographs made on this job and still must print two more of each before the laboratory work will be completed.

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GOOD SERVICE AT MIDLAND, TEX.

Apparently it is not generally known in the Air Corps that government servicing facilities are obtainable at Sloan Field, Midland, Texas. A detachment of enlisted men is stationed there. There is a hangar at the field, and gasoline and oil are available - also meteorological data. A good hotel in Midland, the Scharbauer, gives special rates to Army personnel.

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TACTICAL FLYING IN PANAMA

For the past two months, a series of tactical problems, which involved all tactical squadrons, were carried out by the 6th Composite Group at France Field, Panama Canal Zone, each Saturday morning. These problems were intended to indoctrinate the pilots with the correct tactical principles of their weapon and to increase the efficiency of our communications. In the majority of the problems, the Bombardment simulated enemy bombers attacking a vital point on the Canal, supposedly operating from aircraft carriers at sea. In order to limit the action of the problem, it is assumed that the bombers were reported on the way and must cross a given line about 120 miles from the Zone in a certain interval of time. Pursuit move to an advanced airdrome and remain on the alert, awaiting word from the Observation when the bombers have been picked up. "Our Pursuit have not been equipped with radio here in Panama," says the News Letter Correspondent, "and the messages had to be picked up on a field set which was spotted previously. In good weather Pursuit did not have much difficulty completing their interception, the problem developing into a race of who would arrive first - the bombers over their target or the pursuit on the bombers. When the sky was heavily clouded, the pursuit were under a severe handicap, as once they took off they could hear no further information from observation and had a blind chase.

All pursuit now have left for Albrook Field, and until they are again functioning different problems are undertaken - the bombardment being friendly and being directed to targets by the observation. In spite of the old equipment for communications and the severe conditions of static during the wet season, all problems have been carried out successfully.

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PURSUITERS SEARCH FOR LOST PARTY OF DUCK HUNTERS

On November 10th, the three tactical squadrons at Selfridge Field, Mt. Clemens, Mich., began rotating in the task of searching Lake St. Clair for a party of four duck hunters reported missing. At the time the civil authorities requested help from Selfridge Field in the task of searching for the missing men, more than 48 hours had elapsed since the men had been sitting out in their little duck boat on their hunting trip. At the time of this writing, all hope for the safety of the unfortunate hunters is lost. The Selfridge Field pilots are continuing with the search, hoping that the bodies can be found and recovered. The Squadrons take turns flying patrols low over the water back and forth between points on opposite shores of the lake.

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BOMBING WITH BUILDING MATERIAL

The Department of Agriculture, Territory of Hawaii, plans to build a galvanized iron building at the head of Kaipapau Valley, which runs into the mountains between Hamula and Laie. The building will be 10 feet square, and will be used by mountain climbers and forest rangers when they find it necessary to remain in the mountains over night. Building materials are to be delivered by aircraft to the top of the Koolau Mountains by bombing planes, dropping them on a spot to be designated by the Board of Agriculture and Forestry. The delivery of materials in this novel manner was requested by Charles S. Judd, Territorial Forester. Mr. Judd pointed out that it was impossible to transport the materials in any other way, due to the dangerous mountain trails in that district.

Galvanized iron for the sides and the iron roofing, as well as wooden framework members, are to be done up in bundles of such sizes as may be dropped from an Army bomber from Luke Field. The airmen will try their luck at some practical bombing, and the Forestry Department will have materials on hand which probably could not have been delivered in any other manner. There are at present two similar cottages in the Koolau Mountains, at the heads of Poamoho and Lalaekahana Valleys. They contain a large bed and cooking equipment - the latter being under an overhanging portion of the roof.

Ed. Note: An Associated Press dispatch from Honolulu, Nov. 22nd, states that "An Army bombing plane today lifted a heavy load of sheet metal, lumber, nails and other building material over the Waianae Mountains, a few miles from Honolulu, and dropped the cargo at a spot where the Territorial Board of Forestry wished to build a cabin. Services of the Air Corps were obtained because the vegetation was too dense and the mountain sides too steep to permit surface transportation."

TRAPPING OF THE ELUSIVE COSMIC RAY

By Lieut. Minton W. Kaye, Air Corps

MARCH Field was busily engaged in tendering Mrs. Amelia Earhart Putnam an aerial review when Dr. Robert A. Millikan of the California Institute of Technology paid us a visit. After thoroughly enjoying the review, he requested of Lieut.-Col. H.H.Arnold the use of bombardment equipment to carry his instruments aloft for the purpose of recording the change of effect of cosmic rays upon an electroscope at various altitudes. Dr. Millikan desired his recording instruments carried to altitudes of 10,000, 14,000, 19,000 and 24,000 feet, remaining 45 minutes at each altitude. First Lieut. Charles H. Howard was consulted and stated that the mission was feasible, whereupon a tentative engagement was set.

When the pre-arranged date arrived, there were no scientists on the scene. Word soon came in that while running some preliminary tests at Lake Arrowhead, the instruments had been placed in a scow. The scow, tied to a wharf for the night with instruments aboard, was thought to be safe enough. Nature had not been consulted, however, for during the night a squall came up during which the wind reached such velocities that the scow was torn from its moorings, cast adrift and sunk. The mission was of necessity called off and the scientists went to work dragging Lake Arrowhead and constructing new instruments.

On August 29th, Dr. Millikan, accompanied by his assistant, Dr. Victor Neher, arrived at March Field with new instruments and again enlisted the aid of the Air Corps. The 11th Squadron immediately fell to the task of placing the instruments in one of their Curtiss Condor B-2 airplanes. It will now be necessary briefly to describe the instruments as well as give a brief account of the theory of the cosmic ray. Scientists, with the discovery of radium and the X-ray tube, discovered a peculiar phenomena, namely, that when a charged electroscope was placed in proximity to either radium or an X-ray tube, the electroscope more readily lost its charge. This phenomena had never been explained before. It was thought that rays were emanating from this radium or from the X-ray tube and discharging the electroscope. The electroscope, however, loses its charge regardless of the proximity to either radium or an X-ray tube. This was explained away by stating that, as radium is more or less prevalent in nature, that the rays emanating from such radium were causing this discharge. This theory went unchallenged until Dr. Robert A. Millikan started his experiments shortly after the war. Dr. Millikan constructed an electroscope and carried it aloft at Kelly Field, noting the rate of discharge with varying altitudes. This rate of discharge, contrary to expectations, increased with altitude, that is, the time interval necessary to discharge the electroscope was noted to be shorter at altitude altitude than at sea level. From these tests Dr. Millikan concluded that the force that was discharging his electroscope was emanating from some source other than the earth; out of the cosmos perhaps, so he termed his newly discovered force the cosmic ray - that this force was being filtered out by the earth's atmosphere and that as the instrument was carried into rarer atmosphere more force operated toward discharging the electroscope.

Several years of research and experimentation followed wherein readings were obtained at extremely high altitudes from sounding balloons in Northern Alaska and on top of various peaks. These experiments proved to Dr. Millikan that the force was coming in from without our atmosphere, that the force was as strong at night as during the day and that the earth's magnetic field did not influence it. It had long been Dr. Millikan's desire to obtain some graphic representation of his data so that he could put it before the skeptics and prove his theory. In Dr. Victor Neher, a young professor at California Institute of Technology, Dr. Millikan recognized a competent and skilled assistant, for it was Dr. Neher who constructed the delicate instruments used at March Field. Dr. Neher's problem was to construct an extremely sensitive electroscope, rugged enough, however, to withstand the shocks encountered in flight; to encase this electroscope in a steel sphere under a pressure of 450 pounds per square inch to increase its sensitivity and again to surround the whole with a blanket of lead to filter out any earthly influence.

The electroscope was constructed of fuzed quartz hair drawn to a microscopic thickness to give it the qualities of an electric , then, gold was sublimated upon its surface. This was placed in the sphere surrounded by a solenoid in such a position that light projected through a quartz window would shine upon the pointer of the electroscope, which pointer would cast a shadow through another window, thence through a microscope upon a motion picture film. A chronometric device was fitted which pulled the film past the microscope at a unit speed and also threw a current of 330 volts into the solenoid at fifteen minute intervals, thus charging the electroscope. As it has been found that the cosmic rays penetrated the equivalent of 28 feet of lead, it was shown that they had an extremely short wave length and were of an extremely high potential. A few inches of lead would have very little influence on these rays but would completely filter out the X and Gamma rays. A sphere of lead made up in sections, the whole hollowed out in the center to accommodate the electroscope, was constructed and fitted in such a manner that the lead blanket could be readily removed from the instrument. The assembled instrument weighed well over 500 pounds and with the battery used to charge the electroscope, made a weighty load to boost to 24,000 feet and remain for 45 minutes. An extremely accurate barograph completed the scientific layout.

While the 11th Squadron was engaged in suspending the 500-pound instrument in the tool box of the "Condor," Dr. Millikan was taken to lunch and plied with questions concerning the mysteries of science. Unlike most scientists, Dr. Millikan was willing to discuss his theory with the laymen. As a result, a number of the officers and enlisted men at March Field became profound scientists, for thus it seemed after listening to their discussion of atoms, rays and bombardment from the cosmos.

It was agreed that on each of the projected flights, a full crew would be carried and constant radio communication would be maintained with March Field. This plan offered an excellent opportunity to test personnel and equipment working under extreme difficulties of severe temperatures at high altitudes; for the altitudes had to be maintained to a fine degree of precision. To check the altitude maintained at the various stages was the barograph, standardized by the Bureau of Standards, forever grinding out its telltale record. A delay was encountered in the original take-off, due to the necessity of making readings of the radiation of the radium treated instrument dials on the instrument board of the ship. This was accomplished by placing an electroscope in the ship and recording the radiation after the ship had been removed recording the radiation with the electroscope in the same relative position. The difference between the two readings would be due to the radiation of the radium on the instrument dials.

All preparations completed and recordings taken, the ship and crew were ready to go at one thirty, getting into the air at one thirty-five. On this first trip, Lieut. Charles Howard, commander of the 11th Squadron, acted as pilot, with Sergeant Marquardt as co-pilot and Corporal Cooper at the radio. The first stage was speedily attained and that elevation maintained for 45 minutes. Being in constant communication with March Field by voice radio, we were constantly informed as to the goings-on above. The 15,000-foot elevation was next attained and kept without difficulty. Lieut. Howard then sent word that he was going to 19,000 feet and stated that fog was coming in from the ocean and also from the direction of Cajon Pass. As darkness was coming on, the ground crew became a bit apprehensive. Shortly after, dark high clouds closed in all about March Field, and there was some speculation as to whether Lieut. Howard would come down or head for the desert. About this time a message came through stating that the 24,000-foot altitude could not be attained and that he would remain at 21,000 feet for the stipulated time. Too much gas had been consumed on the flight already.

Shortly before eight p.m., Lieut. Howard asked for a check on the weather, and upon receiving the report, headed for Imperial Valley, landing at Indio at eight p.m. We all breathed a sigh of relief upon receiving the phone call telling us of his landing. The second day's flights were held up until mid-morning by ferrying the ship from Indio, changing records and such. However, the ship got away at 11:20 a.m., with Lieut. Emory Wetzel, pilot; Staff Sgt. Pazersky, co-pilot; Private Roberts, radio, and Dr. Victor Neher as scientific observer. This flight was terminated at 5:15 p.m. Upon landing, Dr. Neher stated that he had enjoyed the flight but that it had gotten a bit cold. Shortly after landing, the ship was checked, gassed and ready to go again. At 6:30 p.m., Lieut. Mills, with Tech. Sgt. Wiedekamp and Pvt. Camp, took off, landing at 11:20 p.m., and yet again the ship was checked, gassed, oiled and ready to go at 1:00 a.m. To Lieut. Ivan Farman, Master Sgt. Kilheffey and Staff Sgt. Patterson fell the graveyard shift. They took off at 1:30 a.m. and landed at 6:05 a.m.

The ship was then given a long rest of two hours, after which Lieut. Joseph Miller, Tech. Sgt. Berg and Sgt. Sellers took off at 8:20 a.m., landing at 1:25 p.m. The work had now developed into well turned out routine and the ship was ready to go again in less than two hours. Lieuts. Harold Bowman and Walter Bass, and Pvt. Sikes took off at 3:25 p.m., and landed at 8:15 p.m. The flights were drawing to a close, with only one more night flight necessary. Lieuts. Donald Lyon, George Campbell and Private Camp took off at 9:50 p.m., and landed at 2:40 a.m. With the termination of this flight, the scientists removed their equipment and hurried in to Pasadena to a few days' preparation and thence to Northern Canada, where the Canadian Air Force was to repeat our flights under the shadow of the Magnetic Pole.

The first three flights were made with the leaden coat around the instrument. Those following, however, carried the unblanketed instrument aloft. This was done to get readings of the radiation of the cosmic rays uninfluenced by earthly rays and also readings of the radiation of cosmic rays affected by earthly radiation. After each flight the records would be removed, the film developed and the barograph sheet fixed. It was found that as a more powerful globe had been installed in the electroscope the first films were tremendously over-exposed. This was remedied, however, at the Photo Section by reducing the film to the proper intensity. Examination of the barograph records showed that the flights were uniformly well flown. The climb was uniformly constant and the various elevations maintained with almost imperceptible variations.

Examination of the records showed that with the lead blanket dampening out all but the cosmic rays, the radiation increased as altitude was attained, the radiation being somewhere between four and five times as great at 21,000 feet as at sea level. With the lead blanket off, however, there was a great discharge at low altitudes which fell off as altitude was attained, and then as further altitude was taken on, increased with the same degree as they had through the lead blanket at those altitudes. This leads one to conclude that the earthly radiation is extremely weak as compared with the radiation of cosmic rays which are coming from without and penetrating untold light years of distance to reach us.

Great credit is due the 11th Squadron officers and men, for it was their splendid morale and efficiency that made the flights possible. With the exception of the first flight, which terminated away from March Field, the ship was never on the ground more than 2 hours and 25 minutes. During this short interval, the ship had to be checked, gassed and oiled and made ready to go again. A crew was on duty constantly at the hangar in spite of the Squadron carrying on its routine work. The enlisted men displayed fine morale and turned out wholeheartedly at all hours of the day or night to keep the ship in the air. The total elapsed time was 62 hours and 5 minutes, of which 13 hours and 45 minutes were spent at Indio. Of the remaining 48 hours and 20 minutes, 37 hours and 40 minutes were spent in the air. This is a splendid record and is another victory for the Jiggs Squadron.

Captain Robert G. Breene, Air Corps Instructor with the National Guard, State of Washington, also cooperated with Dr. Millikan in his scientific experiments. The recording cosmic-ray electroscope with accessories were installed in a Douglas O-38B at Felts Field, Parkwater, Washington. At 1:45 p.m., Sept. 22nd, Captain Breene took off on a flight of four hours and 35 minutes' duration, maintaining altitudes of 10,000, 14,000, 19,000 and 21,000 for 2 period of 45 minutes each. On the following day another flight of a duration of three hours and 27 minutes was made, carrying the same instruments. The gasoline capacity, however, was reduced from 146 gallons to 116 gallons, and the pitch of the propeller changed from 18 degrees, 42' to 18.50 - 42', in an endeavor to exceed 21,000 feet. Level flights of 45 minutes' duration were made at 16" Hg., 15" Hg. and 14" Hg. No material increase in ceiling was obtained. In the afternoon of Sept. 23rd, another flight of a duration of 3 hours and 10 minutes was made. The gasoline capacity was reduced to 86 gallons, the generator and battery removed, and the pitch of the propeller set at 18 degrees 42'. No material increase in ceiling was obtained. Level flights of 45 minutes' duration were made at 17" Hg, 15" Hg, and 13.3" Hg. Dr. Millikan expressed satisfaction at the results obtained.

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A total of 27 pilots from March Field, Riverside, Calif., assisted in ferrying Pursuit airplanes and transports from Mather Field, now abandoned, to Barksdale Field, Shreveport, La., during the latter part of October. The pilots returned to March Field by air transport.

CATERPILLAR CLUB PASSES 500 MARK.

WITH the simultaneous initiation into the Caterpillar Club, on November 17th, at San Diego, Calif., of three officers and one noncommissioned officer of the Marine Corps, when a collision between two fighting planes at an altitude of 7,000 feet during the course of a mimic air battle made it necessary for all four to resort to the parachute, the membership of the Caterpillar Club passed the 500 mark, and Caterpillar stock, common, is now quoted at 503. Sixteen members of the Club pulled the rip cord twice during the course of their flying careers, and one, no less a personage than Colonel Charles A. Lindbergh, exercised the pulling muscles of his arm on four occasions when he encountered trouble in the air.

At this writing, therefore, a total of 522 emergency parachute jumps have been made, distributed over a span of 14 years, as follows:

1919 - 2	1920 - 1	1921 - 0	1922 - 2	1923 - 0	1924 - 10	1925 - 13
1926 - 17	1927 - 40	1928 - 46	1929 - 91	1930 - 131	1931 - 92	1932 - 77

Truly, we are living in a remarkable age. Through man's genius, a contrivance of silk and shroud lines was perfected which has proved a great boon to aviation, as strikingly demonstrated by this large membership in the Caterpillar Club. There is no denying the fact that aviation has made great strides forward. The airplanes of today are infinitely more sturdier, faster and reliable than those which have gone before, but that grim spectre - Accident - still haunts aviation, as it does all other forms of transportation, and while much has been done to curtail its destructive tendencies, the probability is that it will continue to remain with us indeterminably, or until that dim and distant future when the frailties of human nature - the tendency to err - undergoes a radical change.

Initiations into the Caterpillar Club have become so commonplace that those entering the sacred portals of this mythical organization seldom take the trouble to write a lengthy report of their experience for the information of their comrades in the flying fraternity who may in some way or another profit thereby should they ever be confronted with the necessity of undergoing an immediate initiation. Once in a while an enthusiastic Caterpillar takes his pen in hand and dashes off a story of absorbing interest. An instance of this kind is connected with the forced parachute jump of 2nd Lieut. Eugene H. Rice, Air Corps, who deserted his P-12C airplane on the morning of October 27th, while flying three miles east of the Fort Leavenworth, Kansas, flying field.

"I was at 4500 feet when I attempted a full roll on top of a loop," Lieut. Rice stated. "I completed the roll and was ready to loop out when the airplane fell into an inverted flat spin. I attempted to correct the spin but with no success. The engine had died at the end of the roll. When it became apparent the ship was not responding to the controls, I thought it might be necessary for me to use my 'chute, so glanced at the ring and also the safety belt so that I would know just where to reach when I needed them. I planned to leave the airplane between 2000 and 1500 feet, if not under control at that time. I had made about 5 or 6 turns when I reached for the stabilizer, thinking it would help if rolled back. The next thing I remember I was clear of the ship. I was thrown from the airplane with no effort on my part to get free from same. I do not recall unfastening my belt, which I may have done accidently while reaching for the stabilizer adjustment, as I left the ship before I had fully decided to do so. However, I had in mind to leave the airplane soon if I had not regained control. I pulled my 'chute, which functioned perfectly. I do not know the altitude at which I jumped.

As soon as I found I was clear of the ship, I remember making a mental note of my sensation while in the free air, as I had always wondered what this sensation would be. It was a very pleasant sensation, such as lying on something very soft, seemingly with no resistance to any move I tried making. I lost no time in these meditations, however, and began getting my ripcord ring out. It never entered my mind that I should save the ripcord ring, so I gave it a yank and must have thrown it as far as possible at that time. It pulled with so little effort, I really wondered if I had pulled it, so looked at my hand to see if I had the ring there, which I didn't, so I then glanced toward the ring pocket at which time I saw the shroud lines running out between my legs. I watched the 'chute run completely out of the pack before I turned over, keeping me from seeing the 'chute fill with air. There was very little shock to the opening, but immediately thereafter I had the sensation of rising rather rapidly and wondered if I had been caught by an up current of air.

I then watched the airplane till it hit, after which I began wondering where I would land. My 'chute began to oscillate a little at this time and I tried to correct it by pulling the risers, but this made the oscillating worse, so I stopped doing anything about it. The 'chute soon stopped of its own accord. I followed my track across the ground by looking straight down and saw that I would land in the lake over which I had jumped, so I began slipping the 'chute toward the shore line and a small house thereon. While about 100 feet high, I yelled at a woman working in the yard of this house, who had not noticed me. She turned and looked up rather quickly and I imagined with some surprise. I did not get the 'chute over quite far enough, so landed about 200 feet from the shore in water and mud about knee deep. I had succeeded in getting headed around in the direction I was moving before I landed. I struck the ground before I thought I would, so fell flat on my face in the mud. The landing was not hard and I received no bruises, due probably to the soft ground. I grabbed the 'chute up as quickly as I could to keep it from getting any muddier or wetter than could be helped and started walking out of the lake. By the time I reached dry land, I felt pretty winded, so sat down to rest and think the situation over. I thought the next thing I had better do was to get back to the field, so I asked the owner of the house I had landed by to take me there, which he consented to do. We had gone about two miles from the house when I met a group of men from the field and an ambulance coming out for me. I told the men where the ship was and sent one of them to guard it and then returned to the field with another of the enlisted men."

The old trilogy of misfortune paid France Field a visit lately, but luckily, after the brush, there were no broken bones - only tangles and masses of twisted wires and tubes which had previously made up three P-12's. The first skirmish took place on a bright sunny morning, when the 24th Pursuit Squadron was getting rid of some of its vim and vigor by a brief exercise for formation acrobatics. After several maneuvers, a snap roll was performed at the top of a loop, when two of the planes, flown by Lieuts. Roger J. Browne and Frank D. Sinclair, went into a huddle and decided to give their pilots a bath. This was quickly done by joining

wings and starting a dive for the water, one plane still upside down. The planes made the water all right, but the pilots weren't quite as anxious, so delayed their descent as long as possible by taking to their parachutes. Each pilot struck the water, either on or practically on, his own plane, and when help arrived they were sitting quite contentedly on their upper wings, only the worse for a little ducking. As the performance took place over and in Limon Bay, the residents of Colon had a grandstand view, and boats reached the young Caterpillars very quickly.

Three days later, another root of the evil trilogy of misfortune struck when Lieut. E.N. Hamilton was accompanying the 24th Squadron on a navigation mission. The flight had passed Penonome and was headed for Santiago, when Hamilton received a sudden jolt and the impression that his world was coming to an end. After the jolt, no engine could be discovered, on a hasty investigation. As the plane could not be kept from a steep dive, the pilot decided to leave immediately, but his technique was not so good and, after putting most of himself overboard, was forced to reach back in the cockpit and hand the rest of himself out, which had been caught on gadgets. While floating down in his parachute he watched his plane disappear into the soft green cushion below him without a sign remaining where it went in. Then Hamilton landed on the soft green cushion but discovered to his chagrin he was literally "out on a limb," and the limb was at the top of a tree about fifty feet high! After already jumping 1,000 feet, Hamilton called it quits and refused to jump the measly little fifty feet to the ground, but played "Tarzan of the Apes" until he located a good strong creeper or vine on which he slid to the ground. "Three in three days is a pretty run for anybody's money," says the News Letter Correspondent, "but we hope the next time three hits, its three years."

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WHEELER FIELD TO BE PERMANENT HOME OF HAWAIIAN FLIGHT FOKKER

Orders were received by the Hawaiian Department, directing that the U.S. Army Fokker "Bird of Paradise," the first airplane to make a successful flight from the United States to Hawaii, be placed near the main entrance to Wheeler Field as a monument of that historic event. At the present time the plane is at Luke Field in a dismantled condition, but it is proposed to restore it to approximately its condition at the time of the flight to Hawaii. It will be placed in a small pavilion which will be built near the entrance to the field where it landed after a flight from Oakland, Calif., in 1927. The plane will be given several coats of varnish to preserve it. The building will be so constructed as to permit an unobstructed view of the plane from all angles.

The Fokker, a tri-motored monoplane, was flown from Oakland to Wheeler Field in June, 1927, by Lieuts. Lester J. Maitland and Albert F. Hegenberger. The extra fuel tanks were later removed, and the plane was used for three years to transport personnel and freight between the Islands. The arrival of modern amphibian airplanes for these missions resulted in the retirement of the Fokker. It was planned earlier to have the Territory of Hawaii acquire the Fokker and place it on exhibition in Honolulu, but the necessity for economy led the 1931 legislature to deny an appropriation for a building to house the historic plane. Several museums have corresponded with Army officials regarding the airplane, but the expense of placing the huge craft in a mainland exhibit led them to abandon these plans. The building of the pavilion at Wheeler Field will be one of the last improvements in the extensive building program under way there.

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THREE-BLADED PROPELLERS FOR B-5 BOMBERS IN HAWAII

The B-5A Keystone Bombardment planes of the 5th Composite Group, Luke Field, T.H., were recently equipped with three-bladed propellers in place of the old two-bladed type. This change was made following extensive experimentation by the Air Corps Materiel Division at Dayton, Ohio. Tests have shown that smoother operation and greater efficiency are obtained from the same expenditure of power, by using the three-bladed propeller. Another advantage lies in the fact that the multi-blade propeller has a short swing, eliminating the possibility of personnel being injured by accidentally walking into a revolving propeller while the plane is on the ground.

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CAMOUFLAGED PLANES FOIL INTENSIVE SEARCH OF OBSERVATION PERSONNEL

The Observation units of the 5th Composite Group, Luke Field, T.H., in cooperation with the Pursuit Group from Wheeler Field, recently carried out an experiment in camouflage. Two planes of the Pursuit Group were camouflaged and placed on one of the outlying fields on Oahu, and six Observation planes were dispatched to locate them and report by radio when and if the "enemy" were detected. A time limit of an hour and one-half and a minimum of 5,000 feet was imposed. Although the Observers searched diligently during the allotted time and, as a last resort, flew as low as 1,000 feet, no trace of the "enemy" was found. The Wing Commander in an O-19 and his Operations Officer in a P-12 also searched the fields in vain. After the Observers had returned home, a photographic plane was sent out to obtain pictures of the field, having received pin-point instructions as to the exact location of the Pursuit. This was accomplished, and within 20 minutes after the return to Luke Field the photographs, ready for interpretation, were delivered to the Operations Officer. When shown the photos of the "enemy" planes on the field, one of the observers remarked: "Well, they were not there when I came over."

The camouflage consisted of green and brown washable paint applied to the top of each wing, to the undercarriage and to all parts which might reflect the rays of the sun. The paint blended so well with the surrounding foliage that even on the photographs one had to look carefully to detect the planes.

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Forty-three Air Corps officers at Luke Field are now enrolled in the classes of the Army Extension Course of the Air Corps School. This course of instruction covers a number of different subjects, each sub-course pertaining to one of the military knowledge qualifications prescribed for an Air Corps officer.

MUSIC ABOARD A FLYING TRANSPORT

Chanute Field, Rantoul, Ill., recently received music with its religion, at the hands of two of its officers, Major Milton O. Beebe, Chaplain, and Lieut. Roscoe C. Wriston, pilot.

Through the efforts of Major Beebe, the Post Chapel of Chanute Field was the recipient of a chancel organ, as a gift from St. Peter's Lutheran Church of Chicago, through the Coburn Organ Company of that city. The organ was delivered to the hangars of the 33rd Division Aviation, Illinois National Guard, at the Municipal Airport, Chicago. Lieut. Wriston, with a C-14 transport, flew to Chicago and, after due deliberation as to the merits of carrying a wind instrument into a head wind, decided to give the organ an even break. Attempts to load the organ into the transport through the doorway were met only with protesting squawks, in organly flute-like tones when the men tried to squeeze the keyboard in. Abandoning this method of loading the organ aboard, another plan, that of removing the floor of the C-14 and raising the organ into the fuselage from underneath, met with better success, and the musical instrument rested under the protective wings of Mr. Fokker's guardian angel.

On the organic flight back to Chanute Field, a mechanic remained in the cabin guarding the organ to prevent any uncalled for complaints on its part. Not knowing that his mechanic was an amateur organist, Lieut. Wriston was surprised to find himself taking off to the plaintive, seemingly far away strains of "When the Roll is Called Up Yonder, I'll be There." On the entire flight the organ both played and traveled on air, and the pilot, necessarily summoning the full sense of humor at his command, approached Chanute Field for a landing to the tune of "She'll be Singing Hallelujah, When She Comes."

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TWENTY-SIXTH ATTACK SQUADRON WINS PROFICIENCY TROPHY

An Aerial Review, participated in by the entire 18th Composite Wing, Air Corps, Hawaiian Department, was given on November 10th in honor of the 26th Attack Squadron, stationed at Wheeler Field. The occasion for the Review was the presentation of the Annual Trophy for the flying proficiency and maintenance of aircraft for the past training year. The 26th acquired the best record of all Air Corps squadrons in the Hawaiian Department, completing 2,751 hours of flying, an average of 250 hours for each plane, without a forced landing. It not only completed its training schedule, but continued 14% beyond the schedule required.

In addition to this event, another matter of interest to Air Corps squadrons is the forthcoming competition between teams representing all squadrons in gunnery and bombing. There wil be competition between pilots, firing the front guns; between observers firing the rear guns, and in bombing. Each squadron will pick its best men to represent it, and the competition will be held at Waimanalo Field.

The Wing Commander is arranging for suitable awards for the winners.

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SOME SPEED IN PHOTOGRAPHIC WORK

The Department of Photography of the Air Corps Technical School, Chanute Field, Rantoul, Ill., has developed instruction in speed photography with interesting results. Students start from the door of the laboratory, upon a signal, and proceed to and photograph their respective objectives, returning to the laboratory, where they develop and print their photographs. By means of a stop watch, the students are timed from the instant the first signal is given until they hand the instructor the finished prints.

At the first trials, the time ran as much as fifteen minutes, but, after practice, the time for proceeding 600 feet, taking the exposure, returning 600 feet, developing the negative and making the finished print was reduced to a record of 3 minutes and 38 seconds, which is lightning speed as compared with the newspaper speed photography of about 20 minutes.

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NEW HIGH ALTITUDE BOMBING RANGE FOR FIFTH COMPOSITE GROUP

A new high altitude bombing range for the 5th Composite Group, Luke Field, T.H., was completed and put into use on October 15th. In past years, the Group was forced to use for a high altitude bombing target the sunken hull of an old ship lying just outside of Pearl Harbor. Several disadvantages arose in connection with the use of this target, in that the bombing interfered with the firing from Forts Weaver and Kamehameha; the target itself was within traffic lanes for small craft and, finally, there was no satisfactory means of locating the bursts. All of the disadvantages have been eliminated in the new location, it being a simple procedure to locate the bursts by angular readings from two observation towers. No interference to traffic will result from the bombing, as the target is located on the flats of Ahua Point and a sufficient distance from all traffic lanes as to eliminate all possible danger to traffic. The range is also removed from the firing zone of the Harbor Defenses of Pearl Harbor. The target itself is a circle 200 feet in diameter, with a circle of 15 feet in radius as an aiming point, and is constructed of metal drums filled with sand. Lieut. Lloyd H. Tull, Post Armament Officer, was in charge of the constructing detail.

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AIR CORPS IN HAWAII PARTICIPATES IN NAVY DAY PROGRAM

Celebrating Navy Day, October 27th, all available airplanes of the 18th Composite Wing participated in an Aerial Review at Schofield Barracks, in connection with a Review of the Hawaiian Division. The Division was reviewed by Acting Governor Raymond C. Brown and Staff; General Briant H. Wells and Staff, Commanding General of the Hawaiian Department; and Admiral Yates Stirling, Jr., Commandant of the 14th Naval District. Following the Aerial Review, the 18th Pursuit Group of the Wing flew over Schofield Barracks and the Honolulu Sector in formation, spelling "N-A-V-Y," afterward forming a huge "S" in honor of Admiral Stirling. Admiral Stirling commended the Air Corps for the wonderful exhibition of flying, and stated that it was the finest he had ever witnessed. General Wells and his Staff were also highly pleased and extended to the Wing congratulations for the excellent performance.

WAR DEPARTMENT ORDERS AFFECTING AIR CORPS OFFICERS

CHANGES OF STATION: To Chanute Field, Ill.: Capt. James F. Powell and 2nd Lt. Lloyd H. Tull from Hawaii; 2nd Lt. Allen R. Springer from Philippines.

To Fort Crockett, Texas: 1st Lt. David M. Ramsay from Hawaiian Department.

To March Field, Calif.: 2nd Lt. Charles G. Williamson from Hawaiian Department; Captain Albert C. Foulk from Wright Field, Ohio.

To Langley Field, Va.: Captain Charles B. DeShields from Aberdeen Proving Ground, Md.; 2nd Lt. Robert E.L. Choate from Hawaii, (Previous orders in his case revoked).

To Maxwell Field, Ala.: 1st Lt. Charles T. Skow from Fort Benning, Ga.

To Mitchel Field, N.Y.: 2nd Lt. George P. Moody from foreign service. Previous orders in his case revoked.

To Rockwell Field, Calif.: 1st Lt. Donald D. Fitzgerald from Hawaiian Department.

To Hawaiian Department: Majors Laurence F. Stone from Randolph Field; Michael F. Davis from Crissy Field; Captain Douglas Johnston from Scott Field; 1st Lieut. Harold G. Peterson from Mitchel Field; 2nd Lieuts. Douglas M. Kilpatrick, Jr., from Chanute Field; Bryant L. Boatner from Selfridge Field.

To the Philippines: 1st Lt. Narcisse L. Cote from Brooks Field; 2nd Lt. Gerald Hoyle from Rockwell Field; 1st Lt. Ivan L. Proctor from Randolph Field.

RELIEVED FROM DETAIL TO THE AIR CORPS: 2nd Lts. Wm. H. Maguire to Infantry, 2nd Division; Gordon W. Seward to Field Artillery, 2nd Division, Fort Sam Houston, Texas; Howard R. Martindell to 6th Coast Artillery, Fort Winfield Scott, Calif.; Robert D. Glassburn to 62nd Coast Artillery, Fort Totten, New York.

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FLIGHT-CHECKING OF NEW STRIP MAPS

Under orders directing flight check of new Air Corps strip maps between Fort Sill, Okla. and Midland, Texas; Midland and Dallas, Texas; Midland and El Paso, Texas, 1st Lieut. Harold G. Peterson and 2nd Lieut. Elvin F. Maughan. on temporary duty in the Information Division Office of the Chief of the Air Corps, completed this mission in an elapsed time of 35 days and in a total flying time of 131 hours and 25 minutes.

The total area of the three maps which were flight-checked was 77,600 square miles and, since there were about 7,000 square miles overlapping, the total area flight-checked was approximately 70,600 square miles. The total area covered per hour on this mission was 685 sq. miles, and the average altitude flown was approximately 11,000 feet. Twenty flying days were spent on the flight-check, for a total of 103 hours, or an average of 5 hours and 9 minutes per flying day. Seven days were consumed flying to and from the scene of operations, for a total flying time of 28 hours and 25 minutes.

Lieut. Peterson states in his report that, due to the short space of time allotted for this flight check, it was necessary to fly at altitudes greater than that flown in former flight checks, and to some extent the two officers were not able to go into as complete details as before. He believes, however, that they were able to perform the work with sufficient detail so as to correct glaring mistakes and to enter most of the new roads of importance, as well as lakes, railroads and oil fields not previously shown on the maps. A number of new towns were also located.

Leaving Bolling Field on October 7th, at 11:45 a.m., Lieut. Peterson arrived at Chanute Field the following day at 11:35 a.m., where he was joined by Lieut. Maughan. Reaching Hat Box Field, Muskogee, Okla., on October 9th, they took off to start the flight check of the first strip map. The trip to Fort Sill was made in 5 hours and 5 minutes, after flight-checking the northern end of this strip. The period from October 10th to 15th was spent in flight-checking the strip map from Fort Sill to Midland, this work being done in a total flying time of 33 hours and 45 minutes. The period from October 17th to 24th was spent in flight-checking the strip from Dallas to Midland - seven flying days for a total flying time of 37 hours and 5 minutes. From October 26th to November 2nd, the strip from Midland to El Paso was flight-checked, the flying time in seven flying days being 32 hours and 10 minutes.

The two officers were enroute from Midland to Dayton on November 3rd and 4th, the flying time being 10 hours and 15 minutes. They were delayed at Dayton from November 5th to 10th, due to dangerous flying conditions and motor trouble. The actual flight from Wright Field to Bolling Field was accomplished in 3 hours and 55 minutes.

Lieut. Peterson expresses the opinion that, due to the personal equation, flight-checking by hand drawing is far less accurate than the employment of aerial photography, and recommends that a high altitude airplane be built, in order that future mapping missions may be done photographically from an altitude of approximately 35,000 feet; this plane to have a supercharged pressure cabin. With an airplane of this type, one could cover a strip about 125 miles long and 80 miles wide in three flights in one photographic day. One loading of film in the new T-3A camera at this altitude will photograph a strip map 300 miles long, using a ten percent overlap.

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ORGANIZATION DAY FOR THE 19th PURSUIT SQUADRON

The 19th Pursuit Squadron, Wheeler Field, T.H., celebrated its organization day with a holiday on Oct. 15th. This squadron was originally the 14th Aero Squadron, June 17, 1917, at Kelly Field, Texas. It was redesignated the 19th Aero Squadron June 26, 1917, and was demobilized at Garden City, L.I., N.Y., April 14, 1919. The 19th Squadron (Pursuit) was organized October 1, 1921, and was made inactive June 29, 1922, and then was redesignated 19th Pursuit Squadron Jan. 25, 1923, and made inactive May 1, 1923. The 19th Aero Squadron, which was demobilized April 14, 1919, was reconstituted and consolidated with the 19th Pursuit Squadron on August 20, 1923. The unit was assigned to the 17th Composite Group May 1, 1923, and was relieved therefrom and assigned to the 5th Composite Group January 15, 1924. It was relieved from assignment to the 5th Composite Group and, with the 6th Pursuit Squadron, was formed into the Provisional Pursuit Group January 11, 1927, which was redesignated the 18th Pursuit Group on January 20, 1927.

KELLY FIELD RADIO MECHANICS KNOW THEIR JOB

When Brigadier-General Oscar Westover, Assistant to the Chief of the Air Corps, landed at Kelly Field, Texas, on October 31st, in an O-38 airplane equipped with a radio receiver, type BC-SA-167 and interphone, type SCR-167, both controlled from the pilot's cockpit, he reported his radio receiver as unsatisfactory, due to intermittent operation, and made a request on the radio department for a mechanic to place the equipment in satisfactory operation.

With the motor turning up at various speeds, the set was carefully ground-tested in the usual manner prescribed by regulations and found to be operating satisfactorily. The tubes, which had been furnished by Kelly Field, and which were now in the set, were removed and the old tubes, which had been removed, were replaced. Still the set functioned in a satisfactory manner. A short flight was made and the set worked for a while but again started giving intermittent service. When the airplane was returned to the line, two radio mechanics from the Communications Department began a minute check of the equipment to locate the trouble. This checking is a tedious, painstaking job, and to such a job must be assigned well trained, conscientious personnel. By gradually eliminating piece by piece, the junction box of the cable harness was reached. In the junction box is a fuse held in position by a small clip at each end. These clips are held in place by a machine screw, lock washer and nut. The nuts on these screws were loose, and apparently the weight of the fuse caused a connection when the ship was on the ground, even with the motor turning up, but taking off on a rough field or during maneuvers in the air, would change the position of the fuse from time to time, causing the intermittent operation complained of.

Kelly Field radio personnel have been called on in a number of instances to check visiting ships to locate trouble, and their experiences along the trouble-shooting line are many and varied. "This little incident is forwarded for publication," says the News Letter Correspondent, "in hopes that it may help clear up a 'bug' in some other radio receiver, type BC-6A-167, which is giving intermittent service.

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STAFF SERGEANT MILLER PRESENTED WITH "ORDER OF THE PURPLE HEART."

For exceptionally meritorious and conspicuous service during the war, Staff Sergeant Carl O. Miller, 65th Service Squadron, Luke Field, T.H., was awarded the Order of the Purple Heart by the War Department. The decoration was received from Washington by Sergeant Miller. This veteran noncommissioned officer was with the 2nd Ammunition Train, 2nd Division, during the war, and saw service at Verdun, Belleau Woods, Soissons, St. Mihiel, Champaign and the Argonne. At the close of the war he was given a citation for his service by General Pershing.

Sergeant Miller has completed almost 29 years in the Army, and will be retired in a little more than a year. His service has carried him to many posts of the Army, and his record has been excellent throughout. He served during the Philippine Insurrection and with the Punitive Expedition into Mexico.

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AERIAL GUNNERY AND BOMBING IN THE HAWAIIAN DEPARTMENT

"With the recent completion of aerial gunnery for the entire 18th Composite Wing, it is interesting to note the excellent showing of our enlisted pilots and the respective scores made," says the News Letter Correspondent. "Master Sergeant Barney Wallace, 975; Master Sgt. Chester F. Colby, 881; Master Sergeant Samuel J. Davis, 864; Master Sergeant John L. Waugh, 820; Staff Sergeant Maurice Beach is well up to the standards required, but at this writing had not completed the course."

The 26th Attack Squadron, after occupying their new barracks but a few days, moved to the Waimanalo Gunnery Camp, replacing the 19th Pursuit Squadron. "After spending the first day getting settled in camp," reports the News Letter Correspondent, "we started on the regular schedule of aerial gunnery on ground targets the next morning. The scores made this year, in this phase of work, were very gratifying, the Squadron making a much better average than last year. This was to be expected, for all but three of the pilots this season had had previous work in this type of gunnery, whereas in the 1931 season, two or three of the pilots had the advantage of previous experience. Lieut. Leonard H. Rodieck, Squadron Commander, was high man with a score of 887, which is also the highest score on ground targets made at the camp this season. Lieut. James L. Majors was second with a score of 859, and Lieut. John C. Horton, third, with 828. Others who made scores over 800 were Lieuts. Walter S. Lee and Ezekiel W. Napier.

In record bombing, Lieut. George McCoy led the Squadron with a score of 218. Others who bettered 200 in this event were Lieuts. John E. Kuhn and Ralph J. Moore, both Air Reserve. At present we are finishing up record firing on tow targets, both with the fixed gun and for those firing the observers course, the flexible rear gun. In addition, practice is being started on ground targets from a three-ship formation, or in column of three-ship elements, simulating regular attacks on ground troops.

The 72nd Bombardment Squadron conducted aerial gunnery and bombing practice, using sand-filled bombs, on the new range south of Ahua Point, and demolition bombs against a floating target anchored off shore from Kepuhi Point. Instruction and practice in avigation and tactics will also be carried out. The aerial gunnery will be carried out on the course from Ewa to Barbers Point, using a towed sleeve target.

The 23rd Bombardment Squadron also engaged in aerial bombing, using the same range as the 72nd Squadron. Additional training consisted of camera obscura and formation flying.

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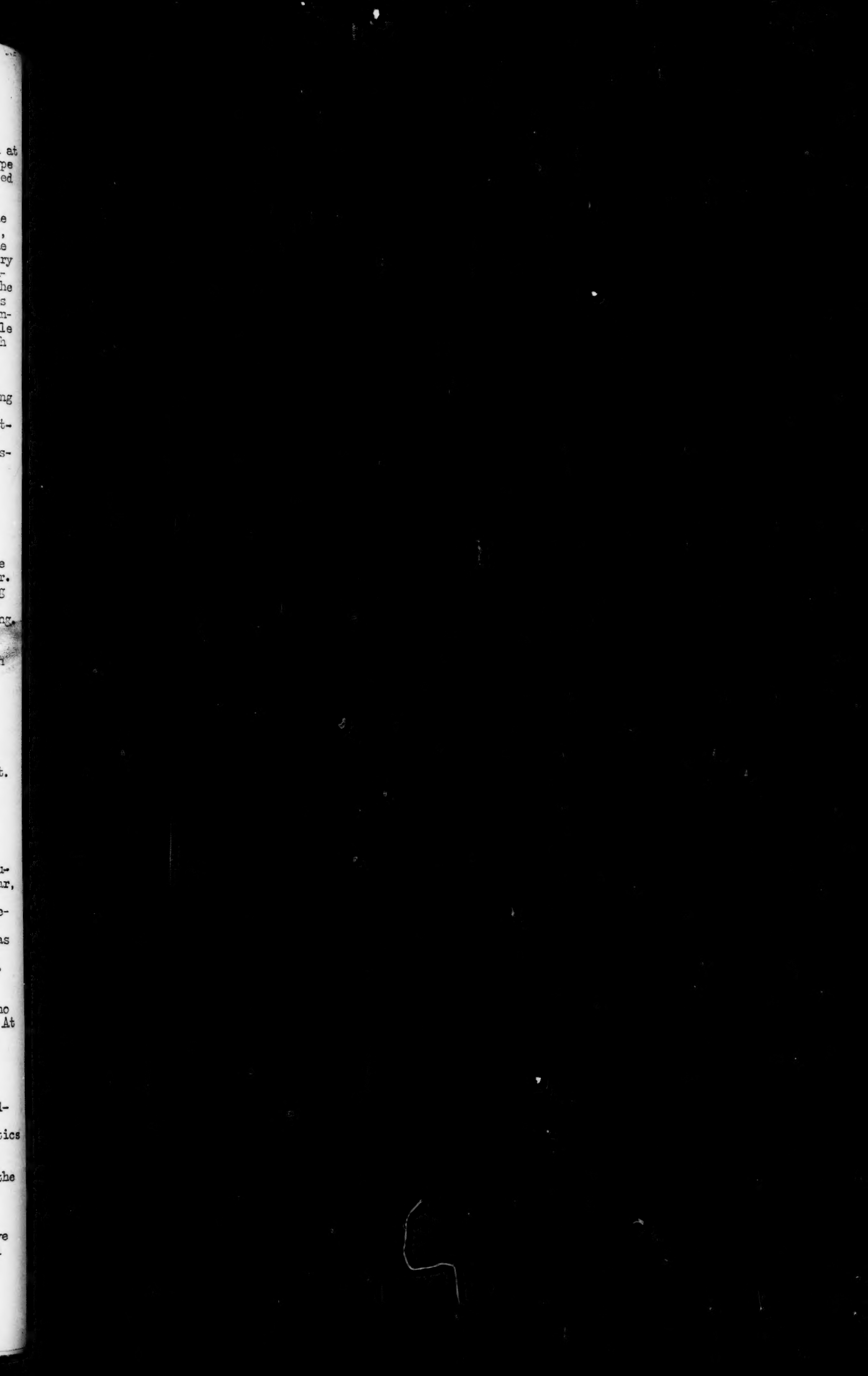
Send in your contributions to the News Letter on the 1st and 15th of the month. We have not heard from Mitchel Field, Maxwell Field, and the Middletown Air Depot for some time, and would ask the Correspondents from these activities to oil up their typewriters and get busy.